



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,101	09/18/2003	Ken K. Chang	5682	6135

7590 09/26/2005

David L. Hedden
Ashland Inc.
P.O. Box 2219
Columbus, OH 43216

EXAMINER

SANDERS, KRIELLION ANTIONETTE

ART UNIT	PAPER NUMBER
----------	--------------

1714

DATE MAILED: 09/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/665,101

Applicant(s)

CHANG, KEN K.

Examiner

Kriellion A. Sanders

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 9 recites the limitation " latent acid curing catalyst " in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

- 4.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coss, US Patent No. 4451577 in view of Kiuchi et al., US Patent No. 5932628.

Art Unit: 1714

Coss discloses a foundry mixture containing a furan-based binder and polyvinyl alcohol. Exemplary furan-based binders include those binders, which are the products of furfuryl alcohol bis-hydroxymethylfuran with itself, bis-hydroxymethyl furan and/or formaldehyde.

Coss further teaches a foundry method for the rapid production of cured, high tensile strength foundry sand shapes from this foundry mixture wherein the polyvinyl alcohol is incorporated into a special thermally-activated strong acid salt catalyst prior to admixture of the catalyst composition with the sand and a furan-based binder. The sand-binder-catalyst composition is then shaped and the sand shapes are heated, resulting in exceptionally high tensile strengths in short times. In foundry methods involving in situ heating of the sand shape within the pattern, clean release (without sticking) from the pattern after cure is achieved. The foundry mixture comprising foundry sand, a furan-based binder, and a catalyst composition containing a salt of a strong acid and a polyvinyl alcohol, is cured in less than five minutes by heat-activating the composition.

Patentee employs catalysts in the process of the invention which include (a) salts of strong acids which are of the type of salts commonly employed in furan binder-containing hot box foundry methods, and (b) salts or pseudo-salts of certain strong organic acids. The strong acid salts which are commonly employed in furan binder containing hot box foundry methods are those salts which have sufficient latency to provide an adequate working life of the composition. See col. 2, line 46 through col. 5, line 30 and claim 1.

Patentee teaches that Polyvinyl alcohol, hereinafter referred to as "PVA", is a water soluble synthetic polymer made by the alcoholysis of polyvinyl acetate. The properties of PVA depend to a large extent on the degree of polymerization and the percentage of alcoholysis, both

Art Unit: 1714

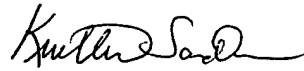
of which are controllable by processing. It is probable that residual polyvinyl acetate is present in the Coss compositions.

Kiuchi et al US Patent No. 5932628 discloses a self-curing binder composition for the production of molds comprising a binder obtained by polycondensation of furfuryl alcohol, urea, and an aldehyde, wherein the difference between the weight % of charged furfuryl alcohol (A) based on the weight of the binder and the weight % of unreacted furfuryl alcohol (B) based on the weight of the binder after the polycondensation is 5.0 to 60.0. In addition to the binder the composition may contain a curing accelerator, a silane coupling agent. The silane coupling agent is preferably added in an amount of 0.03 to 1.0% by weight in the total amount of the composition. See col. 2, line 10 through col. 10, line 49. Since silane coupling agents are considered conventional additives in the formulation of foundry compositions as is documented by Kiuchi et al, the addition of such a coupling agent would have been obvious to one of ordinary skill in the art at the time of applicant's invention. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kriellion A. Sanders whose telephone number is 571-272-1122. The examiner can normally be reached on Monday through Thursday 6:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1714

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kriellion A. Sanders
Primary Examiner
Art Unit 1714

ks